# AUDIT2K

*Indian Health Diabetes Chart Audit for*
*Quality Assurance and Quality Improvement*

## ***Contents***



IHS Diabetes Program

February, 2000

# Preface

Welcome to AUDIT2K! If you are already familiar with the IHS Diabetes Chart Audit process, read the information below for a brief summary of this year's changes followed by quick-start directions. More detailed instructions for any of the steps are available on the pages referred to in parentheses.

> If you have not previously participated in the annual Diabetes Audit, **please** take time to read carefully through Sections I - IX before beginning your audit activities.

## What's new in AUDIT2K?

**U New items**

LIPID LOWERING AGENT: Is the patient on medication specifically designed to lower cholesterol or other serum lipid levels?

HDL CHOLESTEROL: An HDL Cholesterol value is now requested, in addition to values for LDL and Total Cholesterol.

**UModified items**

TOBACCO USE: No longer requires specifying whether a non-user was a past user of tobacco or had never used; now simply asks whether the patient is a current tobacco user, or a current non-user of tobacco.

DM THERAPY: "Troglitazone" has been broadened to "Glitazone" so that this choice now includes newer agents rosiglitazone (Avandia) and pioglitazone (Actos) in addition to troglitazone (Rezulin). Similarly, "Acarbose" has been expanded to "Acarbose (Precose) or miglitol (Glyset)".

HBA1C: The most recent and next most recent HbA1c values are still requested, but the specific test date is requested only for the most recent A1c result.

**U Re-instituted item**

PAP SMEAR: A question on Pap smears has been rotated back into the chart audit this year, after a two year absence.

**U Epi Info Upgrade -- IMPORTANT!**

If you will be entering audit data into Epi Info, it is important to use Epi Info version 6.04c, which is fully Y2K compliant and correctly handles dates with 4-digit years. The 4BUPDATE.EXE file, which contains updates to Epi Info, version 6.04b, is included on the AUDIT2K disk. Refer to page 15 for information on upgrading.

**Quick Start Directions:**

1. Check with your Area Diabetes Consultant to see if an Area-wide Local Option Question has been developed. If a local option question will be used, print it onto the audit form (refer to pg 12).

2. Select in random fashion the appropriate number of charts to review (pg 6-8).

3. **Review the audit form, definitions and criteria with all chart reviewers (pg 9-11).**

4. Perform the chart audit.

*If an IBM-compatible computer (PC) is available to you, you may proceed through the following steps.*

- Confirm that your computer has an upgraded version of Epi Info (6.04c) software that permits dates with 4 digit years. Upgraded versions will display "Version 6.04b to c Upgrade" on Epi's main menu page, written just below the large "Epi Info 6".

- If necessary, upgrade Epi Info by copying the 4BUPDATE.EXE file from the AUDIT2K disk and executing the file (see pg 15).

5. Load the AUDIT2K.* and other files from the accompanying diskette to the computer subdirectory that contains Epi Info, usually \EPI6 (refer to pg 16, step 1).

6. Enter the audit data into the AUDIT2K.REC file, by going to Epi Info's E**N**TER Program and typing in **AUDIT2K** when prompted for the name of the data (.REC) file (pg 16, step 4).

7. If a Local Option question was used, modify the report file to correctly display the results. This is done by making changes to the AUDIT2K.RPT file (pg 13, bottom half).

8. Print out a summary report by entering Epi's **A**NALYSIS program, typing **READ AUDIT2K**, pressing **<F5>**to send the report to your printer, and then typing **RUN AUDIT2K** (pg 17, section XIII).

9. A supplemental Renal Preservation Report can be printed in a similar fashion: begin at Epi's main menu, enter the **A**NALYSIS program, type **READ AUDIT2K**, press **<F5>** to send the report to your printer, then type **RUN RENAL2K** (pg 18, section XIV).

10. Forward a copy of your data file (.REC file) to your Area diabetes consultant.

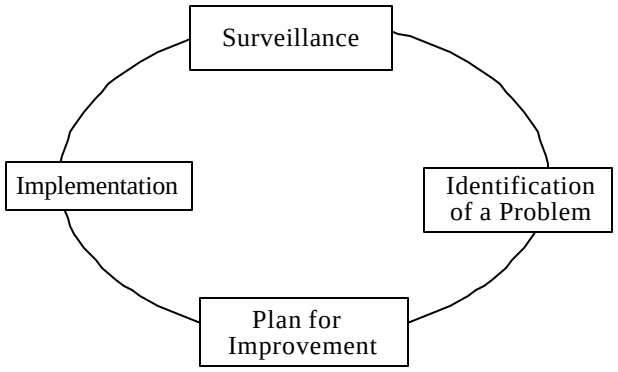
**Instructions for**
**Assessment of Diabetes Care and Health Status**
**2000**

## I. Introduction

The instructions that follow describe a standardized method for assessing the diabetes care and the health status of diabetes patients at your facility. Using a uniform process and standardized definitions provides consistency as you monitor patient care patterns over time. It allows valid comparison of your facility with other IHS, tribal and urban facilities. During the chart audit, diabetes care is compared to the *IHS Standards of Care for Patients with Diabetes* (see attached copy). Instructions for sample size calculations, selecting charts for the audit, and standard definitions for each item are given on the next few pages. Additional assistance, if necessary, can be obtained from your Area Diabetes Consultant.

## II. Chart Audits for Quality Assessment and Improvement Activities

For any facility to provide quality diabetes care, on-going self-assessment and improvement activities are necessary. A number of techniques or methods to pursue improvement may be employed. A central feature of each of these systems is some form of an improvement cycle:




With respect to diabetes, the basic questions to be answered are straightforward: "Are we doing those things that we agreed were important for maximizing the health of our patients with diabetes?" and "Are there ways that we could do better?" Getting accurate and reliable answers is more complex, of course, but the diabetes audit program is designed to make it easier to do just that.

The IHS Diabetes Program recommends annual or more frequent medical record review to monitor care patterns and changes over time at your facility. You should select in a random manner a large enough sample of medical records so that you can be reasonably certain that observed changes are significant and not just due to chance (see sections IV and V). All of the indicators on the audit form, which reflect compliance with the *Standards of Care for Patients with Diabetes*, should be completed as outlined in section VI.

The staff at your facility may be asked to participate in the audit process. While this process may seem tedious at first, many providers have found that participating in the chart audit provides a review of the standards of care for diabetes and identifies trends in diabetes care at their facility. Through the audit, the providers often have a better idea of what changes they can make to improve the outcome for people who suffer from this potentially devastating disease.

Once the audit is complete, the data may be entered into the Epi Info program, from which you can easily print a summary report. The report shows the percentage of charts which have documentation of compliance with each of the indicators. Your Area Diabetes Consultant can assist you in obtaining reports and comparison data. In addition, your Area Diabetes Consultant can assist you in identifying program strengths and deficiencies. Facilities are encouraged to review the recommendations in a team setting, establish priorities together, and develop an action plan with a timetable for re-evaluation.

## III. Adapting the Diabetes Chart Audits to Meet JCAHO/AAAHC Requirements

The health care environment continues to evolve, both within and outside of IHS. In keeping with recent changes, both Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and Accreditation Association for Ambulatory Health Care (AAAHC) emphasize patient centered, performance-based evaluations. Health centers are asked to demonstrate the efficacy and appropriateness of the care they provide. JCAHO and AAAHC both seek to determine whether a health facility is *actually* carrying out those functions that reasonably can be expected to improve the health of the patients they serve.

If JCAHO or AAAHC accreditation is important to your facility, you will be pleased to find that the diabetes audit process described here can serve as an excellent example of the type of performance oriented clinical self-assessment and improvement activity that both of these organization require. The diabetes audit is based on consensus-derived standards of care. These standards are reviewed regularly and then widely disseminated. The audit looks at your facility's actual performance on a number of key processes that are known to (or considered likely to) improve the health of people with diabetes. Outcome measures, such as blood pressure control and glycemic control, are also monitored. Because the diabetes audit is designed to be performed on a regular basis, it can be extremely useful in documenting performance trends that JCAHO or AAAHC find of interest. Additionally, when the diabetes audit results are routinely incorporated into multidisciplinary diabetes care planning activities, they provide a clear illustration of interdepartmental coordination to improve patient care.

**Table I - Sample Size Calculations** (see next page for explanation)

Sample size needed to be 90% or 95% certain that the rate you find is within 10% or within 5% of the true rate, for populations up to 2000.

| **Population** | 90% Certainty | | 95% Certainty | |
|---|---|---|---|---|
| (# of **DM** Patients) | Within **10%** | Within **5%** | Within **10%** | Within **5%** |
| <30 | all | all | all | all |
| 30 | 21 | 27 | 23 | 28 |
| 40 | 25 | 35 | 28 | 36 |
| 50 | 29 | 42 | 33 | 44 |
| 60 | 32 | 49 | 37 | 52 |
| 70 | 34 | 56 | 40 | 59 |
| 80 | 37 | 62 | 44 | 66 |
| 90 | 39 | 68 | 46 | 73 |
| 100 | 40 | 73 | 49 | 79 |
| 110 | 42 | 78 | 51 | 86 |
| 120 | 43 | 83 | 53 | 91 |
| 130 | 44 | 88 | 55 | 97 |
| 140 | 46 | 92 | 57 | 103 |
| 150 | 47 | 96 | 59 | 108 |
| 160 | 48 | 101 | 60 | 113 |
| 170 | 48 | 104 | 61 | 118 |
| 180 | 49 | 108 | 63 | 123 |
| 190 | 50 | 112 | 64 | 127 |
| 200 | 51 | 115 | 65 | 132 |
| 220 | 52 | 121 | 67 | 140 |
| 240 | 53 | 127 | 69 | 148 |
| 260 | 54 | 133 | 70 | 155 |
| 280 | 54 | 138 | 72 | 162 |
| 300 | 55 | 142 | 73 | 168 |
| 320 | 56 | 147 | 74 | 175 |
| 340 | 56 | 151 | 75 | 180 |
| 360 | 57 | 154 | 76 | 186 |
| 380 | 57 | 158 | 77 | 191 |
| 400 | 58 | 161 | 77 | 196 |
| 420 | 58 | 165 | 78 | 201 |
| 440 | 59 | 168 | 79 | 205 |
| 460 | 59 | 170 | 79 | 209 |
| 480 | 59 | 173 | 80 | 213 |
| 500 | 60 | 176 | 81 | 217 |
| 525 | 60 | 179 | 81 | 222 |
| 550 | 60 | 181 | 82 | 226 |
| 575 | 61 | 184 | 82 | 230 |
| 600 | 61 | 186 | 83 | 234 |
| 650 | 61 | 191 | 84 | 241 |
| 700 | 62 | 195 | 84 | 248 |
| 750 | 62 | 199 | 85 | 254 |
| 800 | 62 | 199 | 86 | 260 |
| 900 | 62 | 202 | 87 | 269 |
| 1000 | 63 | 208 | 88 | 278 |
| 2000 | 65 | 213 | 92 | 322 |

> **Minimum** Number of Charts Recommended

## IV. Sample Size Calculations

The number of charts you will need to select depends on the number of people in your diabetes registry. Table 1 on the previous page outlines the number of charts you will need to audit to be reasonably sure (90% confident) that a 10% difference noted from a previous or subsequent audit is a real change and not just due to chance. If, for example, your facility has 1000 people with diabetes, you will need to audit a total of 63 charts (see Table 1).

The registry will often include patients who are not considered active patients of the clinic and thus do not need to be audited. These charts should be identified early in the audit process and excluded. Table 2 outlines the charts which are to be included and excluded.

**Table 2 Patients to Include and Exclude in the Chart Audit**

**Include patients who:**

Attend regular clinics or diabetes clinics.
Refuse care or have special motivational problems (e.g., alcoholism).
Are not attending clinic, but you do not know if they have moved or have found another source of care.

**Exclude patients who:**

Receive primarily referral or contract care, paid by IHS
Have arranged other MD care, paid with non-IHS monies.
Receive their primary care at another IHS or Tribal health facility.
Live in a jail, and receive care there.
Live in a nursing home, and receive care there.
Attend a dialysis unit (if on-site dialysis not available)
Have gestational diabetes.
Have impaired glucose tolerance (IFG or IGT) only.
Have moved -- permanently or temporarily (should be documented)
You are unable to contact, defined as 3 tries in 12 months (should be documented in the chart).
Have died.

Keep in mind that unless your diabetes registry is frequently revised and updated, up to 10% of the people in the diabetes registry may not qualify to be included in the audit. To make sure you have an adequate sample at the end of the audit, **increase the chart sample by at least 10%.** In the example of 63 charts used above, this would mean an additional 6 charts, or a total of 69, would need to be pulled for the audit.

## V. Chart Selection

The systematic random sampling technique will provide the best representative sample for audit. This is done in the following fashion: Suppose you need to select 69 charts from a registry list of 1000 patients. First, divide 1000 by 69, which yields the number 14.4. You now know that you must select one chart out of fourteen. However, don't automatically start with the first person! Use any method of random chance to determine which one of the first 14 people on the list should be selected. Use your imagination .... Number 14 pieces of paper with 1 through 14 and have someone draw one, or simply ask someone to pick a number between 1 and 14. Then use that number to select your first name for chart audit. Proceed through the entire list, selecting every 14th person on the list. **Please note that it is important to track down the charts which are missing from Medical Records as these belong to patients who are likely to have been seen recently and have high compliance with the Standards of Care.**

## VI. Completing the Audit Form

Using the instructions that follow, review the medical record to see if each of the indicators are satisfied. If you cannot find a result in the chart, then *for the purposes of the audit*, apply the old dictum,

> "If it is not documented, it did not happen."

**Finally, please remember that all medical records are confidential documents and need to be handled accordingly.**

## VII. QUALITY ASSESSMENT OF DIABETES CARE, FY2000 ITEM DESCRIPTION

For the purposes of this audit, a **VISIT** is defined as any *primary care* visit, including ER and walk-in clinics. Do not include dental, eye care, patient education, surgery clinics, etc.

DEMOGRAPHIC DATA

**AUDIT DATE, CHART NUMBER, DATE OF BIRTH, SEX:** Self-explanatory.

**AREA, SERVICE UNIT and FACILITY codes -** use the 2-digit official IHS codes ("ASUFAC" codes). Contact your Area diabetes consultant if you are unsure about your correct ASUFAC numbers.

**FACILITY NAME:** Enter your facility s name or abbreviation.

**# OF PTS IN DIABETES REGISTRY:** Enter the number of active patients in your diabetes registry. If your service unit has multiple facilities participating in the audit, make sure you use the correct sample size (number of active DM patients) for each component.
[This is a v**ery important item!** Please take care to assure accuracy].

**DATE of Diabetes Diagnosis:** If only the year of diagnosis is stated, enter "07/01" of that year. If only the month and year are stated, enter the 15th of that month. Leave blank if date is unknown.

**TYPE of Diabetes:** Specify if the patient has (1) Type 1 (a.k.a. IDDM, juvenile onset diabetes), or (2) Type 2 (a.k.a. NIDDM, adult-onset diabetes). Keep in mind that not all insulin-using patients have type 1 diabetes – in fact, most of them have type 2 diabetes. If uncertain, mark as (2) Type 2.

**TOBACCO USE:** Current status of tobacco use (cigarettes, chewing tobacco, snuff, etc) taken from the health summary, problem list or flow sheet. Mark (1) Currently uses tobacco, (2) Does not currently use tobacco, or (3) Tobacco use undocumented.

**Referred for cessation counseling?** [to be completed *only* if currently uses tobacco]. (1) Yes, if provider documents cessation counseling or referral for cessation counseling during the past 12 mo, (2) No, if no cessation counseling in past year, or (3) Refused, if documented that pt. declines/refuses cessation counseling efforts.

VITAL STATISTICS

**HEIGHT:** Enter height in inches, or in feet and inches.

**LAST RECORDED WT:** Record in pounds. If pregnant, use last non-pregnant weight. A note to re-confirm the value appears during data entry if an adult weight is <60 lbs or >600 lbs.

**HTN documented (DX or RX):** (1) Yes, hypertension diagnosis is on the problem list or visit assessment, or medication for hypertension is prescribed. (2) No documented hypertension diagnosis or meds.

**Last 3 BLOOD PRESSURES:** Record the last 3 blood pressures **obtained within the last year.** If a value falls outside of the expected range (e.g., >240 systolic or >140 diastolic) it will not be accepted; a cautionary note to confirm the level appears if systolic BP is >210 or diastolic BP is >130.

EXAMINATIONS (in past year)

**FOOT EXAM:** Exam must include evaluation of sensation and vascular status.
**EYE EXAM:** Exam must include a dilated eye exam or fundus photograph.
**DENTAL EXAM:** Must include examination of the gingiva and mucosal surfaces. Dental records may be kept separate from medical records at your facility.

EDUCATION in past year From flow sheets, progress notes, PHN referral or consults.

**DIET INSTRUCTION:** Note any mention of diet instruction in the past year and code by provider type: (1) Registered dietitian, (2) Non-R.D., (3) Both, or (4) None. If it is documented that pt. refused diet counseling, select (5) Refused.

**EXERCISE INSTRUCTION:** Note any mention of exercise instruction in the past year.

**Any GENERAL DM EDUCATION*:*** Note any recorded patient education in the past year on any topic(s) related to diabetes, **other than diet or exercise.**

TREATMENT (at time of audit)

**DM THERAPY:** Current treatment consists of (select as many as apply): (1) Diet & Exercise *Alone*, (2) Insulin, (3) Sulfonylurea (includes repaglinide (Prandin ) for purposes of the audit), (4) Metformin (Glucophage ), (5) Acarbose (Precose ) or miglitol (Glyset ), (6) Glitazone, including pioglitazone (Actos ), rosiglitazone (Avandia ) or troglitazone (Rezulin ), (9) Refuses therapy, or unknown.

**ACE INHIBITOR/ARB* use:** (1) Currently uses (is prescribed) an ACE inhibitor, (2) does not currently use an ACE inhibitor, or (3) Undetermined.

*For the purposes of this audit, **both ACE inhibitors and angiotensin II receptor blockers** are included here. Examples of angiotensin converting enzyme (ACE) inhibitor drugs include captopril (Captoten), enalapril (Vasotec), lisinopril (Prinivil, Zestril), fosinopril (Monopril), benazepril (Lotensin), quinapril (Accupril) and ramipril (Altace). Examples of angiotensin II receptor blockers include losartin (Cozaar), irbesartin (Avapro), valsartan (Diovan), candesartin (Atacand) and telmisartin (Micardis). If unsure, check with your pharmacist regarding the ACE inhibitors and angiotensin II receptor blockers used at your facility.

**ASPIRIN use:** (1) Currently uses (is prescribed) chronic aspirin, (2) does not currently use chronic aspirin, including those who use aspirin only occasionally ( prn ), or (3) Undetermined.

**LIPID LOWERING AGENT* use:** (1) Currently uses (is prescribed) a lipid lowering agent, (2) does not currently use a lipid lowering agent, or (3) Undetermined.

*Lipid lowering agents include: all "statins" (atorvastatin (Lipitor), cerivastatin (Baychol), fluvastatin (Leschol), lovastatin (Mevacor), pravastatin (Pravachol), simvastatin (Zocor)), gemfibrozil (Lopid), nicotinic acid/niacin, and bile acid sequestrants (colestipol (Colestid), cholestyramine (LoCholest, Questran)). If unsure, check with your pharmacist regarding the antilipemic agents used at your facility.

IMMUNIZATIONS

**FLU VACCINE past year:** (1) Yes, if administered in the past year. If the chart audit is conducted between September and December, give credit for an immunization administered during the previous flu season.

**PNEUMOVAX ever:** Self-explanatory.

**Td in past 10 years:** Self-explanatory.

TB STATUS

**TB Status (PPD):** (1) Last PPD skin test result was positive, or patient has known history of TB, (2) Last PPD was negative, (3) Refused PPD skin testing, or (4) Unknown.

**If PPD Pos, is INH Tx Complete:** (1) Yes, if the patient has documentation of at least 6 months of prophylactic INH or at least 12 months of multiple drug therapy documented for active TB, (2) No, if patient has not completed therapy. Include individuals for whom INH therapy was contraindicated. (3) Refused, if the patient declined therapy. (4) Unknown treatment status.

**If PPD Neg, Date of last negative PPD:** Self-explanatory.

**DATE OF LAST EKG:** Self-explanatory. Leave blank if no EKG recorded.

**PAP SMEAR:** (Females only) (1) Yes, Pap smear was performed during the preceding 12 months, (2) No, Pap smear not performed in the preceding 12 months (include those who did not have Pap due to prior hysterectomy), or (3) Refused, if Pap smear offered but declined by the patient.

LABORATORY DATA

**Hemoglobin A1c:** First, record the most recent $HbA_{1c}$ value and the date it was drawn. Then record the next most recent HbA1c value (Note: assure that the most recent value is listed first)

**or,** (if no $HbA_{1c}$ was done in the past 12 mo)...

**Last 3 BLOOD SUGARS:** Record the last 3 blood sugars **obtained in the past year.** It is not necessary to record blood sugars if one or more HbA1c values have been recorded.

**CREATININE, CHOLESTEROL (TOTAL, HDL, LDL), TRIGLYCERIDES:** For each test, enter most recent value in past year. If the last value is more than 12 months old, do not record it. Caution: avoid inadvertent entry of LDH value for LDL Cholesterol value. For patients on renal dialysis, enter a creatinine value of "99.9".

**URINALYSIS in past 12 months:** Self-explanatory.

**PROTEINURIA:** (For those who had a urinalysis **obtained in the past year** only). Most recent dipstick protein test showed: (1) 1+ (30 mg/dl) or more, (2) No protein (or trace only).

**MICROALBUMINURIA:** (For patients without dipstick proteinuria)
A test for the presence of albumin in the urine was:
(1) Positive, microalbuminuria present, i.e., one of the following criteria is met:
- $\geq$30 mg albumin/L urine
- urine albumin/creatinine ratio $\geq$30 mg/g
- albumin excretion rate $\geq$30 mg/24hrs (>20 µg/min)

(2) Neg, test did not show microalbuminuria, or (3) Not tested or unknown.

MONITORING

**Self Monitoring of Blood Glucose** documented in chart: (1) Yes, if provider has made note of or assessed SMBG results, (2) No, if no mention of SMBG results, or (3) Refused, if SMBG has been recommended to patient, but declined.

[Optional]

**Is Patient Participating in Staged Diabetes Management?** (Only for sites that have SDM):
(1) Yes, SDM stage or phase documented at least once in the last 4 diabetes visits,
(2) No SDM documentation in the past 4 diabetes visits, or (3) Unable to determine (include pts. with no SDM documentation, but fewer than 4 diabetes visits in past 12 months).

LOCAL OPTION QUESTION

A **LOCAL OPTION QUESTION**, if present, will be found at the end of the audit.
Read the question carefully and then select the appropriate response.
(For more information on the Local Option Question, see Section VIII).

## VIII. Local Option Question

Areas and facilities have the ability to formulate their own supplemental audit question, if desired. This permits each Area to analyze an additional aspect of diabetes care that may be of special interest, or to "test run" a question that might be a useful future addition to the national diabetes audit. The procedure for developing and incorporating a local option question is explained below. Although separate facilities within an Area may not necessarily be required to use the same question, it is highly recommended that this be discussed and coordinated with your Area Diabetes Consultant.

The first step is to develop a question that can be answered through a review of individual medical charts. The question can relate to demographics (Indian blood quantum, location of residence, etc), a particular aspect of care (examinations, lab studies, other medications, and so forth), co-morbid condition (history of stroke or MI, for example), a clinic related parameter (such as the number of visits in the preceding month or year), or other auditable element of interest.

The local option question needs to be posed in multiple choice format. The choices may be as simple as 'Yes' or 'No', or may have many possible answers. There can be up to 9 choices, although for ease of answering and reporting it is usually best to limit choices to no more than 4 or 5. Each choice needs to have an assigned number, just like other parts of the audit.

After the question and response choices are formulated, print or type them onto the lower righthand side of the audit form. If there is insufficient room, a separate sheet can be stapled to the audit form. Be sure to precede each choice with its associated one-digit number.

Data entry for a local option question is easy. A special Local Option field is provided at the very end of the audit, and is clearly identified on the data entry screen. Responses from the audit form can be entered there in the same manner all other data is entered.

## L Modifying the Report File

In order for the local option question to appear in the final printed report, it must be included in the report file (AUDIT2K.RPT). To do this, first load all the AUDIT2K files into the Epi Info subdirectory (if necessary, refer to section IX for directions). Then use the following steps to place the local option question into the report file:

1. From Epi Info's main menu, press **<F3>** (Open). An "Edit a file" box will appear and prompt you for a **N**ame. Type **AUDIT2K.RPT** <ENTER>. The AUDIT2K.RPT file will appear.

2. Press the <Page Down> key 9-10 times, or use the down-arrow (9) key to get to the last part of the AUDIT2K.RPT file. You will see the line *#USES LOCAL. Delete the asterisk (*) from the beginning of the line.

3. Immediately below the #USES LOCAL line, substitute your question for the sample question, being careful not to go beyond mid-page. Use multiple lines if necessary. Delete the asterisk (*) from the beginning of each line that you use.

4. Type in each of the possible responses, again substituting for the sample answers. Be sure to delete the initial asterisk (*), but only on the lines that are actually used. Lines with an initial asterisk remain "invisible" when printing the report (If you wish, any extra lines may be deleted by placing the cursor anywhere on the line and pressing <**CTRL**> -y).

5. Check the alignment of the bracketed numbers to the right of the responses. Add or delete spaces until the first brackets of the bracketed numbers line up in a vertical column.

6. Press <**F9**> to save these changes, then <**F10**> to return to the main menu.

7. The report file has now been modified to give the results of your local option question. Enter your audit data if you have not already done so (refer to section X), "clean" your data (optional, see section XI) and then print your customized summary report(s) (sections XII and XIII).

## IX. UPGRADING EPI INFO

Epi Info is the software package that permits you to enter your audit data and obtain audit reports. It is important that Epi Info be upgraded to a version that is fully Y2K compliant. This permits the correct handling of dates containing 4-digit years. Epi Info version 6.04c is fully compliant, whereas version 6.04b and earlier versions are not. The AUDIT2K disk contains everything necessary to upgrade Epi Info version 6.04b to version 6.04c.

Confirm whether you have an upgraded version of Epi Info. This is easily done by looking at Epi's main menu page. The version number is located immediately below the large blue "Epi Info 6". If it says "Version 6.04b to c Upgrade", you have the updated version. If not, you will need to upgrade.

The following steps will upgrade Epi Info 6.04b to 6.04c*:

1. Place the AUDIT2K diskette into the computer's disk drive (a:).
2. From the main menu of Epi Info, select Programs, then go to Analysis.
3. In Analysis, press <**F9**> which will take you to a DOS prompt (usually C:\EPI6>)
4. At the DOS prompt, type **COPY A:\UPDATE\4BUPDATE.EXE**
5. When the file is finished being copied, you should see a message "1 file(s) copied" and be returned to a DOS prompt (C:\EPI6>).
6. Now type at the DOS prompt: **4BUPDATE** This begins the extraction of the file.
7. You will be asked: Continue extraction? Type **Y** <Enter>.
8. There are 23 files that the program will modify.
   For each file, the program will ask if you wish to overwrite the existing file. For example, it will say, "Analysis.exe exists, Overwrite?" Type **Y** <Enter>
9. Repeat step 8 for the remaining 22 files.
10. After the last file (EPITENG.RES) has been overwritten, you will be returned to a DOS prompt.
11. To conserve space on your hard drive, you can delete the 4BUPDATE.EXE file after the above modifications have been completed. Type: **DEL 4BUPDATE.EXE**
12. Type **EXIT** to return to Analysis, then press **<F10>** twice to completely exit Epi Info.
13. The next time you go back to Epi Info, the main menu should state "Version 6.04b to c Upgrade". You have now completed your Epi Info upgrade (until the Windows version becomes available!).

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*If you are using an earlier version than 6.04b, you will need to upgrade to 6.04b before proceeding with the steps listed here. Epi Info version 6.04b is available for downloading at http://www.cdc.gov/epo/epi/epiinfo.htm or you may contact the IHS Diabetes Program Office (505-248-4182) or your Area Diabetes Consultant for a copy of the software.

## X. INSTRUCTIONS FOR AUDIT2K DATA ENTRY

These instructions assume your computer uses the A: drive to receive your audit diskette, and that Epi lnfo is loaded onto hard drive C: in a subdirectory named EPI6, as this is most often the case. If this is not the case in your particular situation, you will need to modify the instructions accordingly. For example, if you are using an old computer in which the diskette goes into a B: drive, substitute "**B:**" for "**A:**" when typing the commands below.

1. Insert the AUDIT2K diskette into your A: drive. Copy all the audit files into the Epi Info program by typing: **COPY A:*.* C:\EPI6** <ENTER>

2. Start the Epi Info program in the usual way (from your computer's main menu or by going to the \EPI6 subdirectory and then typing **EPI6**).

3. If you chose not to audit one or more of the elective items, these items should be removed from the data entry screens. To do this, begin at Epi Info's main menu. Press **<F3>** (Open). An "Edit a file" box will appear and prompt you for a **N**ame. Type **AUDIT2K.CHK** <ENTER>. The AUDIT2K.CHK file will appear on the screen. You will notice that each of the elective items has its own HIDE line, preceded by an asterisk. Delete the asterisk from each line containing an item that you did not audit (i.e., use the arrow keys to place the cursor under the asterisk, then press the <Delete> key). When finished, press <F9> to save the changes, then <F10> to return to Epi Info's main menu.

4. When the Epi Info menu appears, select **P**rograms, then "E**N**TER data". When the program asks for the ____.REC file, type: **AUDIT2K** <ENTER> followed by **1** <ENTER> and then **Y** <ENTER>. The data entry form will appear on the screen.

5. Enter your data into the program. You can set the "NumLock" button on your keyboard to "on", and enter most of the data using the keyboard pad. Note several features:

**Automatic jumps:** Where appropriate, the computer will automatically skip certain sections. For instance, it skips "Pap smear", "Breast exam", and "Mammography" if the patient is a male.

**Must Enter:** Certain items, such as audit date, service unit, number of active patients in the registry, and patient's sex are required by the audit program. You must enter data for these items. However, after the initial record, most of these items will be automatically entered for you, and only need to be re-entered if their value changes.

**Automatic calculations:** The program automatically calculates several items for you. For example, you can enter the height in feet and inches and the computer will calculate the total height in inches. If you already have the height in inches, you may enter that under "inches". Other items automatically calculated include patient's age, BMI, mean diastolic and mean systolic blood pressure.

**Data entry messages:** The program will give you an error message if you enter a value that is outside of the expected range for that field. If your entry is clearly incorrect it may erase what you entered and require you to re-enter the value. At other times it merely asks you to double check to be sure that your entry was what you intended.

6. MAKE A BACKUP COPY!!! It's a good idea to make a backup copy of your audit file **EVERY**

**TIME** you finish entering data. This can save you considerable time and grief if something should happen to your original data. You can easily make a backup by copying your data back onto the same diskette that contained the original AUDIT2K programs. To do this, exit the Epi Info program, get to any DOS prompt (such as **C:\>**) and type the following command:

**COPY C:\EPI6\AUDIT2K.REC A:\<filename>.REC** <ENTER>

You can name <filename> anything you wish (up to 8 characters). If you call it "AUDIT2K.REC", the program will write your data over the empty data file on the diskette, which is fine.

## XI. "CLEANING" YOUR DATA

An optional program, CLEAN2K, is available if you wish to scan your data for possible inadvertent data entry errors. The main AUDIT2K program is designed to identify and permit correction of many errors at the time of data entry, but nevertheless some may occur. The CLEAN program creates a number of error-checking tables or lists. It begins by producing frequency tables on items that should have only a single answer per facility (such as the number of active patients on the diabetes registry, the name of the facility, or the codes for the Area and Service Unit). It also produces a listing by chart number of records having values that are atypical or outside of the usual range for a given item. These listings may or may not represent actual errors, but may be reviewed for accuracy.

To "clean" your data, go to Epi Info's main menu and select **A**NALYSIS from the listing of **P**rograms. Put your data file into the **A**NALYSIS program by typing at the EPI> prompt:

**READ AUDIT2K.REC** <ENTER>

Next, turn on your printer, then press the <**F5**> key to send output to the printer [Note: you can skip this step if you wish and have the results appear only on screen, although most people find it easier to have a printout in hand].

Now, type at the EPI> prompt: **RUN CLEAN2K** <ENTER>

## XII. PRINTING A SUMMARY REPORT

You will probably want to print a report after entering and (optionally) cleaning your data.
[Note: Before printing, if you entered data on a Local Option Question, you should first modify the AUDIT2K.RPT file so that the results of your question appear on the report -- see bottom of pg 10].

To print a report, go to Epi Info's main menu and select **A**NALYSIS from the listing of **P**rograms. Put your data file into the **A**NALYSIS program by typing:

**READ AUDIT2K.REC** <ENTER>

Next turn on your printer, then press the **<F5>** key. A message should appear that says "ROUTE PRINTER", meaning that the output from the **A**NALYSIS program will be sent to your printer (if you wish to have the output appear only on your computer screen, skip this step).

Finally, type:

**RUN AUDIT2K.PGM** <ENTER>

The computer will immediately begin to analyze your data, and will then print the report (or simply display it on your screen, if you did not push **<F5>**).

## XIII. PRINTING A SUMMARY REPORT IN THE OLD FORMAT

If you want to make a direct comparison of your 2000 audit results with those of prior years, you may wish to print a summary report in the format used earlier for glucose and BP control categories.

To print a report that lists the blood glucose control categories and blood pressure control categories in the old format, make a simple modification to the AUDIT2K.PGM file. You delete a single asterisk. The modification can be easily made from Epi s **A**NALYSIS program:

At the EPI6> prompt, type:

**EDIT AUDIT2K.PGM** <ENTER>

The AUDIT2K.PGM file will appear on the screen. On line 23 (which may appear as the last line on the initial screen), you will see the statement

*GOTO OLDREPORT.

Delete the asterisk from the beginning of the line, then press **<F2>** to save the modified file.

Press **<F10>** to return to ANALYSIS, and then follow the instructions outlined earlier in Section XI to print a report. Please note that if you have already run a report, you must re-READ your .REC file in order to produce an accurate summary report in the old format.

## XIV. THE RENAL PRESERVATION REPORT

A supplemental audit report, referred to as the Renal Preservation Report, is available to you. It provides more detail regarding diabetic kidney disease screening and treatment efforts at your facility.

To print the Renal Preservation Report, go back to Epi Info's main menu and then select **A**NALYSIS from the list of **P**rograms. (It is important to do this, even if you were already in **A**NALYSIS, as it "resets" certain variables).

At the EPI> prompt, type: **READ AUDIT2K** <ENTER>

Press **<F5>** if you wish the output to go to the printer, or skip this step if you want it to go to your computer screen only.

At the next EPI> prompt, type: **RUN RENAL2K** <ENTER>

The Renal Preservation Report will now be printed (or will appear only on your screen, if you did not push **<F5>**).

**ASSESSMENT OF DIABETES CARE, FY2000**

AUDIT DATE (mm/dd/yyyy): ____/____/_____ FACILITY NAME: _____

AREA: ____ SERVICE UNIT: ____ FACILITY: ____ # OF PTS IN REGISTRY: _____

REVIEWER (initials): _____ CHART NUMBER: _____ DATE OF BIRTH: ____/____/_____

SEX: G1 Male G2 Female

DATE of Diabetes Diagnosis: ____/____/_____

DIABETES TYPE: G1 Type 1
G2 Type 2

TOBACCO USE:
G1 Current User
G2 Not a Current User
G3 Not Documented

Referred for (or provided) cessation counseling?
G1 Yes
G2 No
G3 Refused

**Vital Statistics**

HEIGHT: ____ft ____ in

Last WEIGHT: _____ lbs.

HTN (documented DX or RX):
G1 Yes
G2 No

Last 3 BLOOD PRESSURES:
_____/_____ mm Hg
_____/_____ mm Hg
_____/_____ mm Hg

**Examinations (in past year)**

FOOT EXAM - complete:
G1 Yes G3 Refused
G2 No

EYE EXAM (dilated/fundus):
G1 Yes G3 Refused
G2 No

DENTAL EXAM:
G1 Yes G3 Refused
G2 No

**Education (in past year)**

DIET INSTRUCTION:
G1 RD
G2 Other @ G3 Both
G4 None G5 Refused

EXERCISE INSTRUCTION:
G1 Yes G3 Refused
G2 No

DM Education (Other)
G1 Yes G3 Refused
G2 No

**DM Therapy**

Select **all** that currently apply:

G1 Diet & Exercise Alone
G2 Insulin
G3 Sulfonylurea (tolbutamide, chlorpropamide, glyburide, glipizide, [repaglinide], others)
G4 Metformin (Glucophage®)
G5 Acarbose (Precose®) or miglitol (Glyset®)
G6 Glitazone (Rezulin®, Actos®, Avandia®)
G9 Unknown/Refused

**ACE Inhibitor/ARB Use**
G1 Yes G3 Unknown
G2 No

**Chronic Aspirin Therapy**
G1 Yes G3 Unknown
G2 No

**Lipid Lowering Agent**
G1 Yes G3 Unknown
G2 No

**Immunizations**

FLU VACCINE (past year):
G1 Yes G3 Refused
G2 No

PNEUMOVAX ever:
G1 Yes G3 Refused
G2 No

Td in past 10 years:
G1 Yes G3 Refused
G2 No

TB Status (PPD):
G1 Pos G3 Refused
G2 Neg G4 Unknown

If PPD **Pos**, INH Tx Complete:
G1 Yes G3 Refused
G2 No G4Unknown

If PPD **Neg**, Last PPD:
Date: ___/___/_____

Date of last EKG:___/___/_____

(Females only)
Pap Smear in past 12 months:
G1 Yes G3 Unknown
G2 No

**Laboratory Data**

HbA1c (most recent): _____.___ %

Date obtained: ____/____/_____

HbA1c (next most recent): ____.___%

or, if no HbA1c available...
Last 3 BLOOD SUGARS:
_____ mg/dl
_____ mg/dl
_____ mg/dl

Most recent serum value **in the past 12 months:**

Creatinine: ____.__ mg/dl

Total Cholesterol: _____ mg/dl

HDL Cholesterol: _____ mg/dl

LDL Cholesterol: _____ mg/dl

Triglycerides: _____ mg/dl

URINALYSIS:
G1 Yes G3 Refused
G2 No

PROTEINURIA:
G1 Yes (1+ or more)
G2 No (Neg or trace)

MICROALBUMINURIA:
G1 Pos
G2 Neg
G3 Not tested

Is self monitoring of blood glucose documented in chart?
G1 Yes
G2 No
G3 Pt refuses to monitor

Is pt. participating in SDM?:
G1 Yes
G2 No
G3 Unable to determine

**Local Option question:**